

REMARKS

Claims 1, 4-11, 14-20, 23-27 and 31-33 are now pending in the application. Claims 2, 3, 12, 13, 21, 22, 28 and 29 have been cancelled. Claims 1, 4, 5, 8, 11, 14, 15, 18, 23, 26, 27, 30 and 31 have been amended. Minor amendments have been made to the specification and claims to simply overcome the objections to the specification and rejections of the claims under 35 U.S.C. § 112. The amendments to the claims contained herein are of equivalent scope as originally filed and, thus, are not a narrowing amendment. The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the amendments and remarks contained herein.

SPECIFICATION

Applicant thanks the Examiner for the amendments to the specification. During preparation of this Amendment, Applicant identified additional amendments to the specification which are needed. These amendments are included with this paper.

REJECTION UNDER 35 U.S.C. § 112

Claims 26 and 30 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which Applicant's regard as the invention. Claims 26 and 30 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which Applicant's regard as the

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invention. The claims have been amended to overcome the rejection. Reconsideration of the rejection is respectfully requested.

DOUBLE PATENTING

Claims 5-7 are objected to under 37 CFR 1.75 as being a substantial duplicate of Claim 4. Claims 18, 19 and 20 are objected to under 37 CFR 1.75 as being a substantial duplicate of Claims 8, 9 and 10, respectively. The dependency of Claims 5 and 18 were incorrect. Claim 5 should have been dependent on Claim 1 and Claim 18 should have been dependent on Claim 11. Corrections of these effective dependencies is included in this Amendment.

Claim 5 depended from Claim 4 but should have depended from Claim 1. Claim 5 has been amended to independent form to include the limitations of Claim 1 and is now believed to be allowable. Claims 6 and 7 ultimately depend from Claim 5.

Claim 18 depended from Claim 1 but should have depended from Claim 11. Claim 18 has been amended to independent form to include the limitations of Claim 11 and is now believed to be allowable. Claims 19 and 20 ultimately depend from Claim 18.

REJECTION UNDER 35 U.S.C. § 102

Claims 1, 2, 11 and 12 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Caillat et al. (Fig. 4). Claims 21, 22, 27 and 28 stand rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Oikawa. Claim 3 was objected to as

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being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 3 depended from Claim 2 which depended from Claim 1. Claim 1 has been amended to include the limitations of Claims 2 and 3 and Claims 2 and 3 have been cancelled. Thus, Applicant believes Claim 1, as amended, patentably distinguishes over the art of record. Reconsideration of the rejection is respectfully requested.

Claim 13 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 13 depended from Claim 12 which depended from Claim 11. Claim 11 has been amended to include the limitations of Claims 12 and 13 and Claims 12 and 13 have been cancelled. Thus, Applicant believes Claim 11, as amended, patentably distinguishes over the art of record. Reconsideration of the rejection is respectfully requested.

Claims 21 and 22 have been cancelled. Claim 29 as objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 29 depended from Claim 28 which depended from Claim 27 which depended from Claim 21. Claim 27 has been amended to include the limitations of Claims 21, 28 and 29 and Claims 21, 22 and 29 have been cancelled. Claim 30 depends from Claim 27

ALLOWED CLAIMS

Claim 4 has been amended to depend from Claim 1 which includes the limitations of Claims 2 and 3.

Claim 8 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 8 depended from Claim 1. Claim 8 has been amended to independent form to include the limitations of Claim 1. Claims 9 and 10 ultimately depend from Claim 8.

Claim 14 has been amended to depend from Claim 11 which includes the limitations of Claims 12 and 13.

Claim 15 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 15 depended from Claim 11. Claim 15 has been amended to independent form to include the limitations of Claim 11. Claims 16 and 17 ultimately depend from Claim 15.

Claim 23 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 23 has been amended to independent form to include the limitations of Claim 21. Claims 24-26 ultimately depend from Claim 23.

Claim 31 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 31 depended from Claim 21. Claim

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31 has been amended to independent form to include the limitations of Claim 21. Claims 32 and 33 ultimately depend from Claim 31.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: August 29, 2004

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ATTACHMENT FOR SPECIFICATION AMENDMENTS

The following is a marked up version of each replacement paragraph and/or section of the specification in which underlines indicate insertions and brackets indicate deletions.

Please replace paragraph beginning on Page 3, lines 14-15 as follows:

Figure 3 is an enlarged cross-sectional view taken generally along line 3-3 in Figure 2 showing the injection system for the compressor shown in Figure 1;

Please replace paragraph beginning on Page 3, lines 18-19 as follows:

Figure 5 is an enlarged cross-sectional view taken generally along line 5-5 in Figure 4 showing the injection system shown in Figure 4;

Please replace paragraph beginning on Page 9, line 15 through Page 10, line 3 with the following:

Valve guide support 234 is attached to an adjacent leg of main bearing housing 24 and it defines a bore 248 which slidably receives slider valve 232 and guides its movement. Valve return spring 236 is located between valve guide support 234 and slider valve 232 to bias slider valve 232 into its vapor injection position as shown in Figure 4. Activating fitting 238 is in communication with one end of bore 240 through a bore 250 in fitting [248]238, a port 252 in shell 12 and a passage 254 in the leg of main bearing housing 24. Bore 250 is connected to a source of pressurized fluid,

such as the discharge pressure of the compressor, through a valve such as a solenoid valve. When this pressurized fluid is provided to the end of bore 240, slider valve 232 moves from its position shown in Figure 4 to a position where modulation slot 246 aligns with fluid passage 118 to permit modulation of the capacity of the compressor through a port 260 extending through main beaming housing 24. A seal 256 isolates the pressurized fluid provided through activating fitting 238. When the vapor injection feature is again desired, the pressurized fluid can be released from fitting 238 allowing valve return spring 236 to again align vapor injection through hole with passage 118 as shown in Figure 4.

Please replace paragraph beginning on Page 10, lines 4-9 as follows:

Referring now to Figures 6 and 7, a fluid injection system 310 according to another embodiment of the present invention is illustrated. Fluid injection system 310 provides an alternative method for accessing the moving pockets defined by wraps [66]60 and 72. Fluid injection system 310 comprises the pair of fluid injection passages 112, a pair of generally vertical fluid passages 314, a pair of tubing assemblies 316, a tubing connector assembly 318, a fluid injection port 320 and a fluid injection fitting 322.

Please replace paragraph beginning on Page 10, lines 10-15 as follows:

Fluid passages 314 each extend generally vertical from thrust bearing surface 54 to the internal suction area of shell 12. Each fluid passage 314 comprises counter bored portion 124 which opens up on thrust bearing surface 54. Counter bore portions 124 maintain[ing] communication with their respective injection hole 112 during

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all movement of orbiting scroll member 56. The lower ends of fluid passages 314 each define an enlarged bore 324 which mates with a respective tubing assembly 316.

ATTACHMENT FOR CLAIM AMENDMENTS

The following is a marked up version of each amended claim in which underlines indicates insertions and brackets indicate deletions.

1. (Amended) A scroll-type compressor for handling a working fluid, said compressor comprising:

a shell having a suction zone and a discharge zone;

a first scroll member disposed in said shell and having a first scroll wrap extending from a first end plate;

a second scroll member disposed in said shell and having a second scroll wrap extending from a second end plate, said second scroll wrap being intermeshed with said first scroll wrap to define a plurality of closed pockets;

a drive mechanism for causing said second scroll member to orbit with respect to said first scroll member, said plurality of pockets moving from a radial outer position in said suction zone to a central position in said discharge zone;

a fluid circuit in communication with at least one of said plurality of pockets, said fluid circuit including a fluid passage extending from said one pocket to a position outside said shell, said fluid passage extending through said second scroll member[.];

a housing disposed within said shell, said housing supporting said second scroll member, said fluid passage extending through said housing; and

a valve disposed within said housing, said valve controlling fluid flow through said fluid passage.

4. (Amended) The scroll-type compressor according to Claim [3]1, wherein said valve is controlled by a pressurized fluid from outside said shell.

5. (Amended) [The scroll-type compressor according to Claim 4, further comprising]A scroll-type compressor for handling a working fluid, said compressor comprising:

a shell having a suction zone and a discharge zone;

a first scroll member disposed in said shell and having a first scroll wrap extending from a first end plate;

a second scroll member disposed in said shell and having a second scroll wrap extending from a second end plate, said second scroll wrap being intermeshed with said first scroll wrap to define a plurality of closed pockets;

a drive mechanism for causing said second scroll member to orbit with respect to said first scroll member, said plurality of pockets moving from a radial outer position in said suction zone to a central position in said discharge zone;

a fluid circuit in communication with at least one of said plurality of pockets, said fluid circuit including a fluid passage extending from said one pocket to a position outside said shell, said fluid passage extending through said second scroll member; and

a valve for controlling fluid flow through said fluid passage.

8. (Amended) [The scroll-type compressor according to Claim 1, further comprising]A scroll-type compressor for handling a working fluid, said compressor comprising:

a shell having a suction zone and a discharge zone;

a first scroll member disposed in said shell and having a first scroll wrap extending from a first end plate;

a second scroll member disposed in said shell and having a second scroll wrap extending from a second end plate, said second scroll wrap being intermeshed with said first scroll wrap to define a plurality of closed pockets;

a drive mechanism for causing said second scroll member to orbit with respect to said first scroll member, said plurality of pockets moving from a radial outer position in said suction zone to a central position in said discharge zone;

a fluid circuit in communication with at least one of said plurality of pockets, said fluid circuit including a fluid passage extending from said one pocket to a position outside said shell, said fluid passage extending through said second scroll member; and

a housing having a plurality of legs disposed within said shell, said housing supporting said ~~[first]~~second scroll member, said fluid passage extending through one of said legs of said housing.

11. (Amended) A scroll-type compressor for handling a working fluid; said compressor comprising:

a shell;

a non-orbiting scroll member disposed within said shell and having a non-orbiting scroll wrap extending from a non-orbiting end plate;

an orbiting scroll member disposed within said shell and having an orbiting scroll wrap extending from an orbiting end plate, said orbiting scroll wrap being intermeshed with said non-orbiting scroll member to define a plurality of closed pockets;

a drive mechanism for causing said orbiting scroll member to orbit with respect to said non-orbiting scroll member, said plurality of closed pockets moving from a radial outer position where said working fluid is at a suction pressure to a radially inner central position where said working fluid is at a higher discharge pressure during said orbital movement;

a fluid circuit in communication with at least one of said plurality of moving pockets, said fluid circuit including a fluid passage extending from said one pocket to a position outside of said shell, said fluid pocket extending through said orbiting scroll member[.];

a housing disposed within said shell, said housing supporting said orbiting scroll member, said fluid passage extending through said housing; and

a valve disposed within said housing, said valve controlling fluid flow through said fluid passage.

14. (Amended) The scroll-type compressor according to Claim [13]¹¹, wherein said valve is controlled by a pressurized fluid from outside said shell.

15. (Amended) [The scroll-type compressor according to Claim 11 further comprising]A scroll-type compressor for handling a working fluid; said compressor comprising:

a shell;

a non-orbiting scroll member disposed within said shell and having a non-orbiting scroll wrap extending from a non-orbiting end plate;

an orbiting scroll member disposed within said shell and having an orbiting scroll wrap extending from an orbiting end plate, said orbiting scroll wrap being intermeshed with said non-orbiting scroll member to define a plurality of closed pockets;

a drive mechanism for causing said orbiting scroll member to orbit with respect to said non-orbiting scroll member, said plurality of closed pockets moving from a radial outer position where said working fluid is at a suction pressure to a radially inner central position where said working fluid is at a higher discharge pressure during said orbital movement;

a fluid circuit in communication with at least one of said plurality of moving pockets, said fluid circuit including a fluid passage extending from said one pocket to a position outside of said shell, said fluid pocket extending through said orbiting scroll member; and

a valve for controlling fluid flow through said fluid passage.

18. (Amended) [The scroll-type compressor according to Claim 1, further comprising]A scroll-type compressor for handling a working fluid; said compressor comprising:

a shell;

a non-orbiting scroll member disposed within said shell and having a non-orbiting scroll wrap extending from a non-orbiting end plate;

an orbiting scroll member disposed within said shell and having an orbiting scroll wrap extending from an orbiting end plate, said orbiting scroll wrap being intermeshed with said non-orbiting scroll member to define a plurality of closed pockets;

a drive mechanism for causing said orbiting scroll member to orbit with respect to said non-orbiting scroll member, said plurality of closed pockets moving from a radial outer position where said working fluid is at a suction pressure to a radially inner central position where said working fluid is at a higher discharge pressure during said orbital movement;

a fluid circuit in communication with at least one of said plurality of moving pockets, said fluid circuit including a fluid passage extending from said one pocket to a position outside of said shell, said fluid pocket extending through said orbiting scroll member; and

a housing having a plurality of legs disposed within said shell, said housing supporting said orbiting scroll member, said fluid passage extending through one of said legs of said housing.

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23. (Amended) [The scroll-type compressor according to Claim 21, further comprising] A scroll-type compressor for handling a working fluid, said compressor comprising:

a shell having a suction zone and a discharge zone;

a first scroll member disposed in said shell and having a first scroll wrap extending from a first end plate;

a second scroll member disposed in said shell and having a second scroll wrap extending from a second end plate, said second scroll wrap being intermeshed with said first scroll wrap to define a plurality of closed pockets;

a drive mechanism for causing said second scroll member to orbit with respect to said first scroll member, said plurality of pockets moving from a radial outer position in said suction zone to a central position in said discharge zone;

a fluid circuit in communication with at least one of said plurality of pockets, said fluid circuit including a fluid passage extending from said one pocket to said suction zone of said compressor, said fluid passage extending through said second scroll member; and

a housing disposed within said shell, said housing supporting said second scroll member, said fluid passage extending through said housing.

26. (Amended) The scroll-type compressor according to Claim 24, wherein said fluid passage is in communication with an injection port extending through said shell and said valve is movable between a first position where said [fluid passage]one pocket communicates with said suction zone of said compressor and a

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second position where said [fluid passage]one pocket communicates with [a position outside]said injection port extending through said shell.

27. (Amended) [The scroll-type compressor according to Claim 21, further comprising] A scroll-type compressor for handling a working fluid, said compressor comprising:

a shell having a suction zone and a discharge zone;

a first scroll member disposed in said shell and having a first scroll wrap extending from a first end plate;

a second scroll member disposed in said shell and having a second scroll wrap extending from a second end plate, said second scroll wrap being intermeshed with said first scroll wrap to define a plurality of closed pockets;

a drive mechanism for causing said second scroll member to orbit with respect to said first scroll member, said plurality of pockets moving from a radial outer position in said suction zone to a central position in said discharge zone;

a fluid circuit in communication with at least one of said plurality of pockets, said fluid circuit including a fluid passage extending from said one pocket to said suction zone of said compressor, said fluid passage extending through said second scroll member; and

a valve for controlling fluid flow through said fluid passage[.]; wherein;

said valve is disposed within said shell; and

said valve is controlled by a pressurized fluid from outside said shell.

30. (Amended) The scroll-type compressor according to Claim 27, wherein said fluid passage is in communication with an injection port extending through said shell and said valve is movable between a first position where said [fluid passage]one pocket communicates with said suction zone of said compressor and a second position where said [fluid passage]one pocket communicates with [a position outside]said injection port extending through said shell.

31. (Amended) [The scroll-type compressor according to Claim 21, further comprising]A scroll-type compressor for handling a working fluid, said compressor comprising:

a shell having a suction zone and a discharge zone;

a first scroll member disposed in said shell and having a first scroll wrap extending from a first end plate;

a second scroll member disposed in said shell and having a second scroll wrap extending from a second end plate, said second scroll wrap being intermeshed with said first scroll wrap to define a plurality of closed pockets;

a drive mechanism for causing said second scroll member to orbit with respect to said first scroll member, said plurality of pockets moving from a radial outer position in said suction zone to a central position in said discharge zone;

a fluid circuit in communication with at least one of said plurality of pockets, said fluid circuit including a fluid passage extending from said one pocket to said suction zone of said compressor, said fluid passage extending through said second scroll member; and

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a housing having a plurality of legs disposed within said shell, said housing supporting said first scroll member, said fluid passage extending through one of said legs of said housing.

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